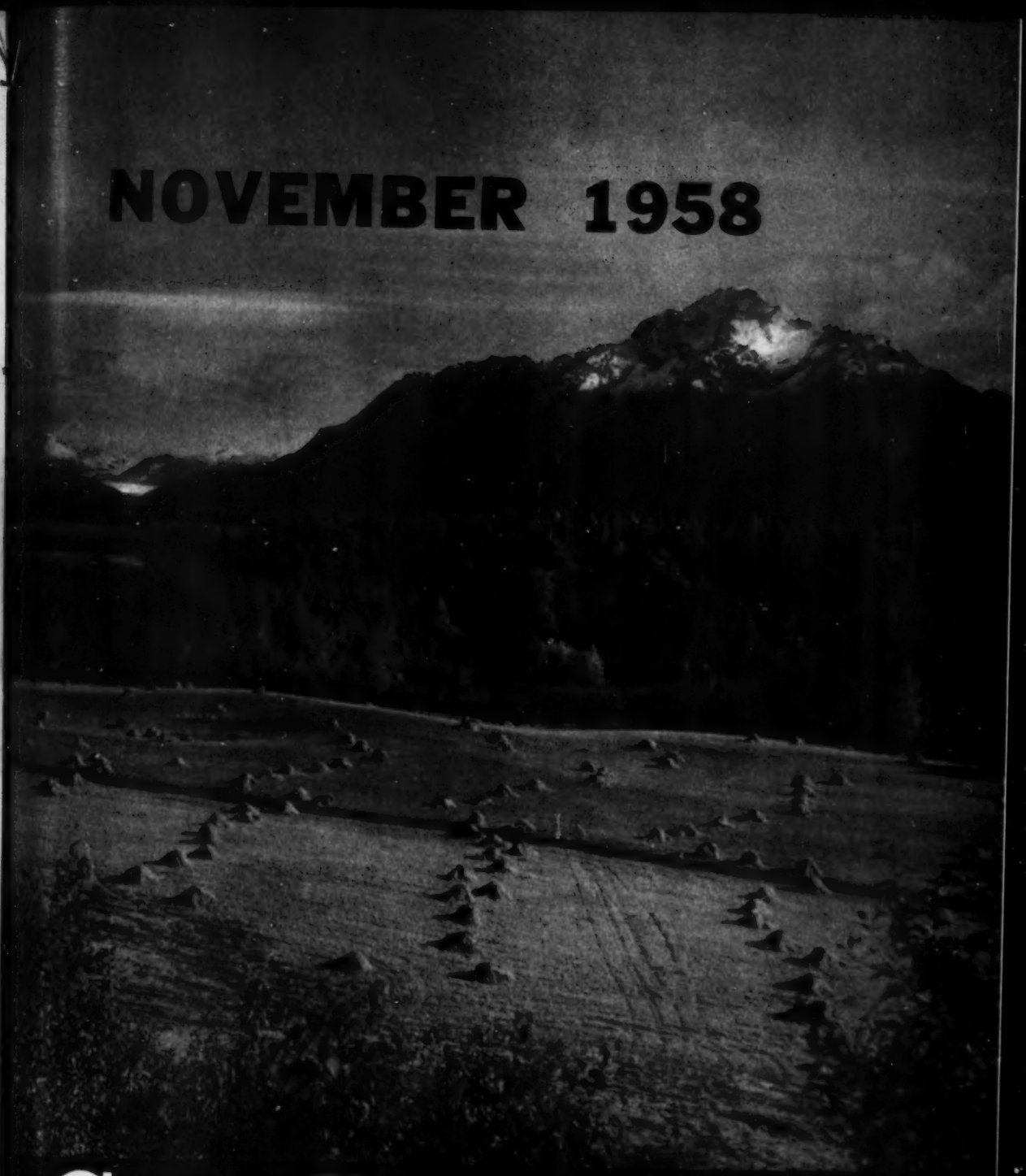

NOVEMBER 1958

SOIL CONSERVATION

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SOIL CONSERVATION

NOVEMBER—1958
VOL. XXIV NO. 4

EZRA TAFT BENSON
SECRETARY OF AGRICULTURE

DONALD A. WILLIAMS
ADMINISTRATOR, SOIL CONSERVATION SERVICE

OFFICIAL ORGAN OF THE SOIL CONSERVATION SERVICE
U. S. DEPARTMENT OF AGRICULTURE, WASHINGTON, D. C.

★ THIS MONTH ★

TOM DALE, Editor

SOIL CONSERVATION is published by direction of the Secretary of Agriculture as administrative information required for proper transaction of the public business. The printing of this publication has been approved by the Bureau of the Budget, June 26, 1958. SOIL CONSERVATION supplies information for workers of the Department of Agriculture and others engaged in soil conservation.

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A LETTER TO THE EDITOR.—

DeSmet, South Dakota,
August 18, 1958.

Dear Mr. Dale:

We are enclosing a copy of a letter recently sent to the Superintendent of Documents ordering 50 one-year subscriptions to the magazine, SOIL CONSERVATION.

It has been the policy of this district to provide all new cooperators with a year's subscription. Including this order, the Kingsbury County Soil Conservation District has, to date, provided 895 one-year subscriptions during the ten years of the district's existence.

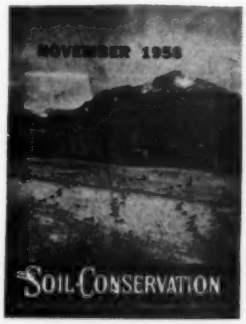
As evidenced by its long continuity, we have always felt that this project of ours is well worth while.

Sincerely yours,
Harold C. Fritzel, chairman,
Kingsbury County Soil
Conservation District

Dear Mr. Fritzel:

We thank you and the other supervisors of the Kingsbury County Soil Conservation District for your vote of confidence in SOIL CONSERVATION Magazine.

—EDITOR



FRONT COVER.—Barley field in Alaska with Pioneer Peak in the background.

The Story of a Picture

By VIRGIL S. BECK

THE sun rays beam through an opening in the clouds in the late afternoon; they focus on a hillside with contour strips of wheat stubble interspersed with strips of grass. The camera catches the scene and gives us one of the most widely used pictures of soil conservation produced in this generation.

This classic photograph was made in the early fall of 1952 by Robert B. Branstead, then regional photographer of the Soil Conservation Service at Portland, Oreg. The scene was a conservation farm in northwest Idaho. Branstead had spent most of the day at Moscow, Idaho, waiting for the rain and drizzle to cease, so that he could take some suitable photographs of conservation practices in that locality. By mid-afternoon, he decided that the perpetual rain and drizzle might stop and permit some photography. He traveled to this scene and waited. The sun did break through the clouds and this picture was the result. Branstead says this was the only usable picture he made all that day. But this was enough.

This striking soil conservation scene soon attracted national attention. The National Association of Soil Conservation Districts adopted it as an illustration for "An Eleventh Commandment" poster issued in connection with Soil Stewardship Week. Soil conservation districts throughout the country liked the poster

Note:—The author is information specialist, Soil Conservation Service, Berkeley, Calif.

with the intriguing picture. The districts purchased thousands of copies of the "Eleventh Commandment" poster. Today, the poster can be found on the walls of schoolrooms, in ministers' studies, in banks, soil conservation district and SCS offices, and in numerous other places throughout the country.

"Where was the picture made?" is the question that has been voiced by many thousands as they were thrilled at their first view of this spectacular soil conservation scene.

So, here's the answer to the oft-voiced question.

The picture was taken on the 240-acre farm of Charles A. Bower, about 10 miles north of Kendrick, in northwestern Idaho. Bower, a bachelor, resides with his widowed mother, Mrs. Charles J. Bower, on the 100-acre home place where he was born 38 years ago.

Bower and his mother became cooperators of the Latah Soil Conservation District in December 1946. As Bower went about the job of applying soil- and water-conservation practices on the 100-acre home place, he often paused to observe the terriffic erosion damage on the adjoining 240-acre farm.

Charles A. Bower.

This is the Palouse country. The Palouse is a strip of steep hills, about 100 miles long and 50 miles wide, created by wind-blown soil in Idaho and Washington. The soil is highly fertile but is extremely erodible. Many slopes of 30 percent or more are farmed. Unless vegetation protects the steep slopes from swift runoff, water-erosion damage can be terriffic. Deep gullies are cut in the sloping hillsides, and farming soon becomes difficult or impossible.

This was the type of erosion that Bower had been observing on part of the adjacent 240-acre farm as he worked on the home farm in the late forties.

Then one day in the fall of 1950 the telephone rang in the Soil Conservation Service work unit office at Kendrick. Manning Onstott, who provides technical assistance to farmers in this part of the Latah Soil Conservation District, answered.

"Hello, Manning. This is Charley Bower. I've just bought that 240-acre eyesore, so now what can I do with it?"

"Contour strip it," was Onstott's reply.

Bower signed a cooperative agreement with the Latah district, and Onstott assisted him in drawing up a conservation plan. The conservation program provides for a 3-year rotation of grain, legumes, and grasses in a stripcrop pattern. Strips vary from 150 to 200 feet in width on the steep slopes, depending upon the degree of slope and practicability of farming.

Before Bower started his conservation program on the steep slopes, he and Onstott made an accurate measurement of soil losses from water erosion. They figured the average was 90 tons per acre. This year another measurement was made. According to the best estimates, the use of soil- and water-conservation practices has cut soil loss to an average of 5 tons to the acre.

Meanwhile, crop yields have more than doubled. When Bower acquired the farm in 1950, the wheat yield was only 25 bushels to the acre. In 1957, the yield was 55 bushels to the acre. Barley and oats produced only a half-ton to the acre in 1950, but last year the yield was a ton to the acre.

Bower keeps a small herd of milk cows, so uses the legumes for hay, and seed is harvested for sale. He now has 30 percent of his farmland in grasses, such as brome and fescue along

with red and alsike clovers and alfalfa. He plans to continue contour stripcropping and crop rotation, and he will construct waterways and seed them to grass.

"I'm convinced that contour stripping and crop rotations will solve the erosion problem on the many sloping fields in this part of the country," declares Bower.

But Bower is more than a conservation farmer. He is vice-chairman of the Latah Soil Conservation District board of supervisors. He is the lecturer for the Deary Grange. He likes to hunt and fish and is an expert taxidermist, as heads of moose, elk, deer, and other mountings in his home will attest. He spends hours in his farm workshop where he makes many of his farm machinery attachments. And he also instructs in square dancing.

So, this is the story of the famous conservation picture made on Bower's farm in 1952. Today, a print of the picture on the "Eleventh Commandment" poster will be found in every classroom in the Latah County schools, in all the banks, and homes of ministers, thanks to the efforts of the women's auxiliary of the Latah Soil Conservation District.

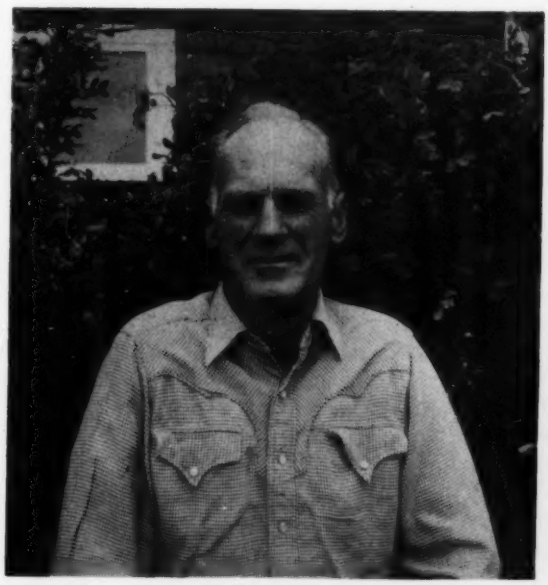
Balancing An Overstocked Ranch

By ORVILLE SPARROW

HOW do you balance an overstocked ranch? You don't! You cut the stocking down to where the cattle and feed are in balance; then, if you use good range management practices, you can build the stocking back as the range is improved. I learned years ago that this is the only way to build up a ranch, and I have always preached it.

About the time I was elected to the board of supervisors of the Beaverhead Soil Conservation District a rancher asked me how he could build up his range to carry the number of cattle he wanted to keep. He explained that his family was growing up; he had two boys in college and a boy and girl in high school. He had to buy some new ranch equipment. Insurance payments, taxes, and interest had made it necessary to borrow operating money. He figured he was running enough cattle to meet his obligations, but that he had to overstock his ranch to do so.

I told him that I didn't think it could be done. But he still seemed interested in becoming a cooperator with the district if the assistance we bragged so much about would help him balance his ranch to his cattle. I explained that putting two combines in a field would not double the yield of wheat, and likewise, more cattle wouldn't increase the pounds of beef he could get from his ranch unless the food was there.



Orville Sparrow.

Note:—The author is a supervisor of the Beaverhead Soil Conservation District, Wiseman, Mont.

I also tried to explain to him that the Soil Conservation Service technicians helping our district were not magicians. They were just a group of well-trained men with a lot of experience in engineering, farming, range management, soils, and irrigation. Not only that, they had back of them specialists in each of these fields that constantly supplied the technicians with the latest technical developments and information. The services of these men were available at any time and they frequently had been called upon to help solve problems peculiar to Beaverhead County.

He had met Jess McWilliams, our SCS plant material specialist, and was thoroughly impressed by his knowledge of grasses. I explained how Jess covered the whole State of Montana, as well as Wyoming, and was not only an authority on native Montana vegetation, but had done a lot of work with introduced grasses as well as with those developed at the SCS grass nurseries in the country. I told him about the new grass called Mandan ricegrass that Jess had helped develop from a cross between green needlegrass and indian ricegrass. Also, how Jess had made some of the seed available to Art Christensen, a cooperator with our district, and that the largest stand in existence was in Beaverhead County.

As best I could, I described the abilities and duties of Bob Ross, SCS range conservationist and Roger DeLand, SCS agronomist who, in conjunction with Mel Morris of the State university, did the work on the effect of fertilizer on dryland intermediate wheatgrass in the Bitter Root area.

He said he doubted if he had the time to do all of the things that many men might dream up, but he still would like to raise enough grass to hold his present bunch of cows together.

I told him there would be a conservation plan set up that would embody the thinking of these men and the benefit of their experience. He would probably never talk to but one technician, and he would be the one assigned to the final preparation of his plan.

I explained that there would be a range survey and a soils map made of his deeded range and pastures. The range survey would not only determine the present carrying capacity of which the land was capable but also its potential capacity. The soils map would be a map with complete description of the various types of soils found on the ranch and the proper treatment for each one of them. Included with the plan would be a composite aerial photograph of the entire ranch, showing the various meadow and pasture units as they are fenced and the

Preparing a seed bed on native sod for planting improved grasses on the Sparrow ranch.

Native sod (left) and intermediate wheatgrass (right) on the Orville Sparrow ranch.

acreage of each. On this photograph all of the topographic and cultural features of the ranch would be plainly visible.

The only part of the plan that would require much of the rancher's time was the written portion that covered the many problems of operation, their solution, and the projects that would be agreed upon to increase grass production on the ranch. By the time the plan had reached this stage the technician would be pretty well aware of the possibilities and have the necessary information on range and pasture conditions and soils and irrigation. He and the technician would then sit down and discuss the problems and proposed projects. When they were in accord with a solution to any one of the problems, it would be incorporated into the plan.

Knowing he had several projects in mind to increase his grass production, I told him this was the time and place to discuss these projects, and to decide if they were of sufficient merit and how best to put them into execution.

He was particularly interested in reseeding dry rangeland. I suggested that he go over each site he had in mind and get the technician's reaction and his advice on the grass or grasses best suited to each, the best way to prepare a seed bed, and how to seed it. In fact I told him so much about so many things he finally asked for an application to sign before I got started again. As he signed it I thought about those extra cattle, but I thought I had better let the technicians explain that little fact of life.

As time passed I couldn't tell from the manner of the technician who had helped him make up the plan that anything out of the ordinary had happened, and I was too much of a coward to ask him.

This fall I met this rancher for the first time since the big sales talk. He seemed pleased to see me, so my curiosity overcame my guilt feelings and I invited him to have a cup of coffee.

Out of habit, and it seemed a perfectly safe question under the circumstances, I asked him if he had started to feed yet. His eyes lighted up like a pinball machine and he was away. Among many other things he said that for the first time since he had been ranching, he had lots of fall feed and would be able to rustle his cows until the snow got so deep they could no longer find the grass. Not only that, this was the first fall he had had any grass left on his summer pastures. He admitted that when his

The Sparrow ranch headquarters.

conservation plan had been delivered he looked at the proper stocking rates that had been assigned to his pastures and was tempted to give the whole thing up.

During the range discussions the technician had pointed out many possibilities that the rancher was not aware of. He could see where the same principles would apply to some situations the technician had overlooked. Perish the thought! His enthusiasm was sufficient so that he finally quit worrying about the suggested stocking rates and went to work on the outlined projects.

With the changes in ditches on the meadows he made better use of his irrigation water and he simplified some haying operations. Fewer contour ditches replaced the existing downhill ditches. More extensive use was made of waste water that ran off the meadows onto the pastures. He had been using a large wrango pasture, a holdover from horse days, for his bulls. A rough corner in one of the meadows was fenced off for them, and as a result he cut two bents of hay in the wrango pasture. One of his large fields had some native pasture fenced in with some hay meadow. He put a fence between the meadow and dryland, and increased the amount of pasture available at the time of the year when he needed it most. The added forage from this field and the increase from the use of waste water made enough forage to enable him to defer one meadow and not pasture it until quite late in the season. He chose the one with the greatest variety of reseeding sites. Each year he broke up as much land as he had time for and seeded it.

Where a new ditch made it possible to irrigate a new piece of ground, he broke this up and seeded it for meadow. He planted timothy, alsike, Sherman big bluegrass, and birdsfoot trefoil in this meadow. The first two were sown together and the other two sewn in pure strands. All did very well.

The dryland he seeded to crested, intermediate, tall, and Whitmar wheatgrass, Russian wildrye, green needlegrass, and Sherman big bluegrass. The bluegrass had not been recommended by the technician for dry land but it had done so well under irrigation he wanted to try it under range conditions. These seedings all were successful.

Since he had been able to defer this field each year, the new seeding was protected and the native grass was allowed to mature, with a consequent increase in volume, density, and vigor. With this field in reserve he could plan on from several days to weeks of good rustling for his cows after he previously had to start feeding hay. He was now cutting ample hay for his cattle, and his pastures were no longer being abused. Each year the increase in both hay and forage was gratifyingly evident.

I asked him if he planned to increase the number of cattle now that his ranch had caught up with what he had been running. He said, "You talked me off that hook once and I am not going to get into the position of having to listen to it again. From now on I am going to keep my hay and pasture ahead of my cattle."

CONTRACTOR AIDS.—Several soil conservation districts in New York State furnish their excavation contractors with hand levels and folding rulers without charge. No contractor is allowed to start shovel work without these tools.

The rulers are graduated in tenths. Grade stakes every 50 feet give a 5-foot cut "mark" which the operator measures down from.

Benefits of this gift service: Work quality is up, required supervision time is down. Farmers gain because there is less "over excavation"; there's almost no doubling back to correct the grade. Shovel operators, down in the ditch to check depth, more often check side slope and top width, too. Soil Conservation Service technicians still make that all-imporant final check.

—CHARLES R. BARNETT, JR.

RUNOFF—HOW FAST AND HOW MUCH

No. 39

This is the thirty-ninth of a series of articles to appear from time to time in explanation of the various phases of research being conducted by the Department of Agriculture on problems of soil and water conservation.

By J. B. BURFORD and J. H. LILLARD

WHY does the dam have to be so high and the spillway so large? Then, a farmer may also ask, "Why doesn't my pond fill with water?" These familiar questions are becoming increasingly critical in present-day agriculture.

The soil- and water-conservation programs are effective in reducing runoff losses, but there is a limit to the amount of water that the soil can retain for crop use. Thus, a large portion of the water received during the high rainfall periods is lost to ground water aquifers. On the other hand, the higher crop yields resulting from improved plant varieties, better fertilization, and good management increase water requirements, often to the point where supplemental supplies are needed.

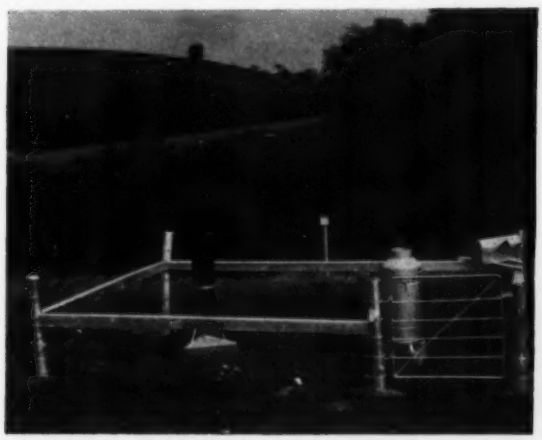
During recent years the Soil Conservation Service has assisted farmers in the design and construction of approximately 20,000 ponds in Virginia. Most of these were for the usual farm needs; but, more recently many irrigation water supply ponds have been constructed.

A recent study of agricultural drought conditions in Virginia by Van Bavel and Lillard[1] indicates that the number of drought days (days in which there is insufficient soil moisture available to insure maximum plant growth) to be expected 5 years in 10 will range from 20 to 70, depending on the water-holding capacity of the soil and location in the State. Under the same conditions the driest year in 10 will have 40 to 90 drought days.

Obviously, under such conditions the use of irrigation will increase and result in an even greater demand for dependable surface water supplies. Various authorities, guided by the present trends, predict that our national water requirements for all uses will about double within the next 10 to 20 years, and that agriculture, through increased irrigation of farmland, will soon be using one-eighth of all available water.

Therefore, we will have to keep building "high" dams and "large" spillways until there is enough hydrologic data from agricultural watersheds to properly evaluate the effect of various agricultural programs, soil characteristics, topography, and other conditions on runoff losses. Then, more economical designs for the retention structures may be possible.

Technicians engaged in the current watershed development work and the flood prevention programs on agricultural watersheds are also faced with many problems and unknowns. They



A typical precipitation measuring station, located in Montgomery County, Va.

Note:—The authors are, respectively, project leader, watershed technology branch, Agricultural Research Service, and professor of agricultural engineering, Virginia Agricultural Experiment Station, both of Blacksburg, Va.

[1] Van Bavel, C. H. M., and Lillard, J. H. *Agricultural Drought in Virginia.* Agricultural Experiment Station, Technical Bulletin 128. 1957.

A concrete highway culvert, 4 ft. x 4 ft., used as a stream gaging station below a 152-acre watershed in Halifax County, Va.

are confronted with the tasks of estimating the maximum peak discharges and the total amounts of runoff for the extreme conditions from the areas being controlled and developed.

These present trends in agricultural watersheds have emphasized the need for improved methods of predicting hydrologic information for areas in the size range of about 50 acres to a few thousand. The best methods and procedures for determining watershed information can only be developed by measuring actual conditions and determining the relationship between the different variables. Continuous runoff and rainfall records must be collected from areas in this size range, with special attention given to the various soils, topography, land use, climatic conditions, and other variables.

Long-time streamflow records are available for most of the large rivers. Similar data have been collected for several very small areas; but, only a few areas in the critical, intermediate-size range of 50 acres to a few thousand acres have been studied. The periods of high water from these intermediate-sized watersheds are so short that velocity measurements are not easy to obtain, making streamflow determinations very difficult without the use of precalibrated controls. Precalibrated structures large enough to measure the maximum flows from these critical-sized areas are massive and expensive to construct.

A concrete dam used as a stream gaging station for a 2,850-acre watershed in Pulaski County, Va. This dam was constructed in 1913 and was adapted for stream gaging in 1957.

A double 6 ft. x 6 ft. concrete highway culvert being used as a gaging station to measure stream flow from a 760-acre watershed in Montgomery County, Va.

This problem of measuring runoff from these areas can be solved to some extent by instrumenting existing structures for which the relationship between streamflow depth and discharge can be determined. The most common structures in this category, in Virgina, are standard box-type highway culverts made of concrete. With the addition of a low flow control, these culverts are excellent flow measuring devices, provided they have desirable upstream and downstream conditions.

The hydrology research program in Virginia

is taking advantage of these existing structures and expanding activities to include several watersheds in the intermediate-size range. Five new areas were instrumented during 1957, and 5 additional watersheds are scheduled for instrumentation in 1958. Nine of these new areas, ranging in size from 152 to 1,980 acres, are above highway culverts. The tenth area, of 2,850 acres, is above a large concrete dam built, in 1913, below an ice pond. These 10 areas, in 9 different locations—the mountains, valleys, and Piedmont area counties—are each being instrumented with two or more automatic precipitation measuring stations and one streamflow measuring station. Local observers are contracted to service the recorders and make certain observations.

In most cases the culverts can be calibrated from model studies made at the Agricultural Research Service Outdoor Hydraulic Laboratory at Stillwater, Okla. Culverts with structural variations sufficient to complicate calibration are being modeled and studied at the laboratory.

Watershed hydrology research in Virginia is a joint project of the ARS and the Virginia Agricultural Experiment Station, cooperating with the SCS and the Virginia Department of Highways.

The SCS assisted in making a survey of possible experimental watersheds in Virginia during 1956. About 130 areas above an existing rateable structure or a possible weir location were investigated. These watersheds ranged in size from 75 to 3,000 acres, and are areas from which long-term streamflow data are badly needed. The new watersheds being included in the hydrology research program were selected as the 10 choice areas among the group investigated.

The goal of this program is to obtain, with minimum cost, information needed to more accurately compute the hydrologic information required to design water supply and control structures on the intermediate-sized agricultural watersheds.

FISH AND TIMBER IN ALASKA.—The fishing industry of Alaska brings in an income of about $79 million a year. The timber industry, second only to fishing, yields about $35 million annually.

Radio Broadcast Aids Tree Planting

By ELMER L. WORTHINGTON

THE Three Rivers Soil Conservation District of North Dakota uses the local radio station to help them plan and execute their spring tree-planting program. The tree planting extends over about a 3-weeks period in the spring, and it takes considerable detailed planning to carry on the job efficiently. One important part of this planning is the routing of the tree-planting machine and crew so that backtracking is held to a minimum.

Farmers who have trees to plant must have the land properly prepared before the planting is done. In order to insure that the site is ready before the planting machine and crew arrives, it was found that the use of the local radio station was very effective. This radio station relays the routing of the tree-planting machine for each day as a public service.

Each morning at 7:30 a soil conservation aid from SCS gives the radio announcer a list of farms that will be planted that day. Then the announcer, on his regular morning program at 8:30, reads off this list, which gives the order in which the plantings will be made. If, for some reason, such as rain or extremely windy weather, the crew cannot plant that day an announcement to this effect is made in a later broadcast.

Soil conservation district personnel really like this system as it saves them time and money. Farmers like it because they know when to expect the planting crew. This practice not only makes the tree-planting program more efficient, but it advertises the tree-planting practice to everyone in the listening area.

This system was started 3 years ago by Gordon Brackett and Corliss Nelson, SCS technicians assigned to that district. Ed Balkke, editor of the *Walsh County Record* at Grafton was glad to cooperate with the district on his daily news broadcast over radio station KROX, Crookston, Minn., from its Grafton studios.

Several farmers, after hearing the routing

Note:—The author is woodland conservationist, Soil Conservation Service, Bismarck, N. Dak.

for the day, have called in to request that some trees be planted on their farms as the crew goes by. It has become a habit for farmers or the farm wife to listen for the routing schedule.

Proof that such a system is effective was given when one farmer refused to plant his trees on a certain day because his name was not mentioned during the broadcast.

$'s From Coastal Bermuda

By R. H. HOLLEY

COASTAL bermudagrass is proving to be one of the most profitable crops on the farm of Quinton and Braddy Rowell, cooperators with the Orangeburg Soil Conservation District in South Carolina.

In 1957, the Rowell brothers bought 60 feeder cows in the early spring. The cows were placed on 30 acres of 2-year-old coastal bermudagrass pasture that had been established on rather light, sandy soil. The cows grazed for 4 months and were sold in late August. Profits from the cattle were $30 per head, or a total of $1,800.

In addition, the Rowell brothers cut 2 tons of hay per acre from this pasture during the summer and fall. Half of the hay was given in payment for having it cut and baled. The other half was sold for $25 per ton. The sale of the hay paid nearly half the cost of the heavy fertilization given the bermuda field.

Before grazing began the Rowell brothers applied three-quarters of a ton of limestone and 500 pounds of 3–12–12 fertilizer per acre. In addition, 500 pounds of ammonium nitrate was applied per acre in 2 different applications. Total cost of the lime, fertilizer, and nitrogen came to $56 per acre. Although this initial cost seemed high it carried 2 cows per acre for 4 months and produced 2 tons of quality hay per acre.

The Rowell brothers started their conservation program several years ago. They started with a soil- and water-conservation plan, which they prepared with the help of SCS personnel. The steeper, lighter fields were planned for sericea lespedeza and coastal bermudagrass.

In commenting on this field, Quinton said, "We made more profit on coastal bermudagrass on this light, sandy land than we had been making from cotton on good class I land."

Note:—The author is work unit conservationist, Soil Conservation Service, Orangeburg, S.C.

Quinton Rowell examines coastal bermuda growing on light, sandy soil.

Conservation On The Plains

The First Signers in South Dakota of a Great Plains Conservation Contract Have a Balanced Program of Soil and Water Conservation with Plenty of Wildlife Habitat.

By LES ALBEE

LAWRENCE BERGNER and his father, Emil, signed the first Great Plains contract in South Dakota, March 24, 1958. Their 1,834 acre livestock farm is located in Brule County, 12 miles south of Chamberlain, S. Dak.

To carry out their 4 year Great Plains contract, the Bergners' agreed to plant an additional 9 acres of trees, construct 2 more miles of level terraces, continue their conservation crop rotation on 150 acres, manage crop residues on 28 acres, and plant tame grasses on 11 acres. They will also carry out proper range use on 1,360 acres, construct 250 rods of cross fences for better distribution of grazing, pit 70 acres of rangeland, seed 50 acres of depleted range to native grasses, and construct 3 additional stockwater dugouts. Lawrence feels that he can speed up the conservation treatment of their lands by cost-sharing under the Great Plains Program in addition to assistance received from the Agricultural Conservation Program Service and the soil conservation district.

"A Great Plains producer can plan his conservation operations years ahead and be assured of needed cost-sharing, as soon as the practices are completed. This is the most complete conservation program we've had yet to help farmers and ranchers make adjustments in land use and to speed up needed treatment of their lands for protection against soil and water losses," Lawrence said, summing up his comments on the benefits to farmers and ranchers of the Great Plains Conservation Program.

The Bergners' Grand View Angus farm consists of about 1,360 acres of native rangeland, 150 acres of cropland, 260 acres of hay and tame pasture, plus the wildlife areas and farmstead.

Note:—The author is assistant State conservationist, Soil Conservation Service, Huron, S. Dak.

Lawrence first learned about soil, water, and wildlife conservation from his father. Emil Bergner became a cooperator with the Brule-Buffalo Soil Conservation District in 1944. He began a conservation program which Lawrence is still working to complete. Lawrence took over active operation of the farm in 1946 when he returned from the Navy.

"But we don't feel we'll be through applying conservation practices to our farm even when we have completed this Great Plains contract," Lawrence asserted before the ink was dry on the papers he and his father had just signed.

When you first approach the Bergner farm, you are impressed with obvious signs of good management of soil and plant cover and conservation treatment of the crop and rangelands. The first field you see is a luxuriant growth of

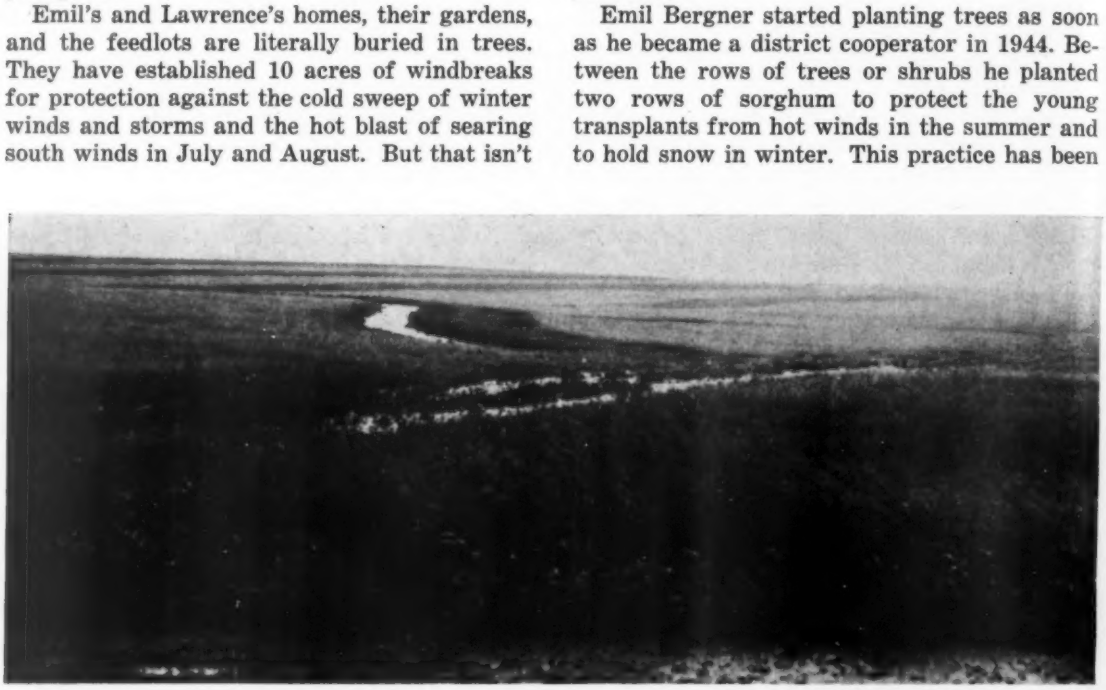
Lawrence and Emil Bergner (seated left *to* right) sign their Great Plains contract while SCS men look on.

crested wheatgrass and alfalfa on terraced land, providing excellent soil protection on the 3 to 5 percent slopes.

Turning into their driveway, you see wide, unmowed strips of smooth brome on each side, making a haven for nesting pheasants and the young birds.

Emil's and Lawrence's homes, their gardens, and the feedlots are literally buried in trees. They have established 10 acres of windbreaks for protection against the cold sweep of winter winds and storms and the hot blast of searing south winds in July and August. But that isn't all! In addition to being a haven for wildlife, the Bergners and their neighbors harvest large quantities of fruit, berries, and nuts from these windbreaks. There you'll find apples, apricots, cherries, sand cherries, raspberries, plums, buffalo berries, walnuts, and other edible fruits and nuts.

Emil Bergner started planting trees as soon as he became a district cooperator in 1944. Between the rows of trees or shrubs he planted two rows of sorghum to protect the young transplants from hot winds in the summer and to hold snow in winter. This practice has been



When 2 inches of rain fell in 20 minutes on the Bergner farm there was no runoff from the terraced pasture of crested wheatgrass and alfalfa (above), while runoff and soil loss was great from a neighbor's field across the road (below).

so successful that Lawrence still employs this design of protecting the young trees and shrubs with one row of corn and one row of cane, sudangrass, or milo for the first 3 or 4 years. These plantings also provide food for grouse and pheasants in the winter. Catching and holding snow, too, reduces tree damage by rabbitts. Ten acres of windbreaks now protect the buildings and livestock in the feedlots. Nine acres more are planned as part of their Great Plains plan.

The Greater South Dakota Association awarded Lawrence an expense paid trip to the State college conservation short course in 1954 in recognition of his outstanding achievements in soil and moisture conservation. Lawrence was one of three State winners in the 1956-57 Izaak Walton League wildlife habitat contest. He is an assistant supervisor of the Brule-Buffalo Soil Conservation District.

Some proof of the effectiveness of the Bergner's conservation program was observed by SCS employees on July 18, 1958, when nearly 2 inches of rain fell in 20 minutes. This flash downpour was absorbed or controlled without damage in terraces on Bergner's crested wheatgrass-alfalfa pasture.

In contrast, on adjoining land across the road, where corn was listed up and down the 3 to 5 percent slope, the water was led off down the rows to the low point where it collected, overtopped, and washed out several rows of corn. The silt-laden water then overtopped the county road and was lost from this cornfield, taking much topsoil with it.

Better Forage, Less Grain

Massachusetts Dairy Farmers Increase the Quantity and Quality of Hay and Pasture Through Conservation Practices and Save Money on the Grain Bill.

By EDWARD G. KONIECZNY

RAYMOND G. HOWES and his sons have increased their production of top-quality hay by 40 tons through pasture improvement, drainage, diversion construction, and stripcropping on their 196-acre, 70-cow dairy farm at Ashfield, Mass. In addition, they have cut their grain bill by $400.

Mr. Howes and his sons, Ralph, Merton, and Emory, obtained these production benefits after developing a farm conservation plan. They started the plan 8 years ago with help from Soil Conservation Service technicians assigned to the Franklin Soil Conservation District.

Building a 600-foot diversion with farm tractor and plows was the first job. The diversion kept excess water from spreading over a 4-acre field below. With excess water removed, the Howes were able to reseed the field. They

Ladino clover in a diversion channel is inspected by Ralph Howes (left) and Ed Konieczny.

Note:—The author is work unit conservationist, Soil Conservation Service, Greenfield, Mass.

Ralph Howes (right) and Ed Konieczny observe one of the six diversions on the Howes farm.

worked the field for seeding in alternating contour strips about 120 feet wide. They limed, manured, and fertilized the strips before seeding.

The Howes first planted sundangrass for silage and to smother weeds. They planted an alfalfa mixture after harvesting the sudangrass. The first harvest of alfalfa hay showed a 4-ton increase over previous yields. Diverting excess water from the field and stripcropping brought the increase.

"The diversion worked the way the technicians said it would; so we decided to put in another," Ralph said.

Over a period of 4 years the Howes have installed more than a half mile of diversions. They have stripcropped 40 acres.

"The thing we like most about our diversions is that they allow us to get on the land sooner in the spring, and we don't lose any land as a result of them," Ralph said. "We can work our land and seed it to legumes that produce more and better feed for our cows.

"I figure we have increased our yields by a ton per acre and have reduced our grain bill by about $400 because we're getting higher quality hay," Ralph added.

The most recent conservation job was the improvement of 2 acres of pastureland. The Howes undertook this project to replace 2 acres of land lost by the building of a new highway through a part of the farm.

Using a bulldozer, the Howes built 800 feet of V-type drainage ditches in the 2 acres. The total cost of bulldozer work and picking of stone and debris was $400.

"Liming, fertilizing, and seeding cost another $120," Ralph said. "If we had to buy the hay to replace the pasture, I figure we would have to pay $50 per ton. At 3 tons per acre, the value of hay produced on the 2 acres would be $300. On that basis, this project will pay for itself in 2 years."

The Howes farm has won numerous awards. The farm has placed among the top three in the county Green Pasture Contest during 3 years of participation. It won the Franklin Soil Conservation District conservation award in 1953.

Ralph Howes is chairman of the soil conservation district governing board and vice chairman of the Massachusetts Association of Soil Conservation Districts.

FEDERAL LAND IN ALASKA.—More than 99 percent of Alaska's vast area—covering 586,400 square miles—is land now controlled by the Federal Government.

BRITISH AGRICULTURE.—The annual agricultural output of England in 1957 was 63 percent above the prewar (World War II) level.

What Soil And Water Conservation Means To A Dairyman

By C. T. SMITH

EVERY dairy farmer knows, or soon finds out, that an abundance of succulent grazing is a "must" for milk production. Grain and concentrates are essential, but grass (in the form of grazing, silage, and hay) tips the scales toward the credit side of the ledger.

For many years we have known the value of fertilizer. Ever-increasing rates of application are being recommended—and used. These and many other basic principles, we know or think we know. Yet, in too many cases, the need for more and more acres appears to be a limiting factor.

Additional acres, for the most part, are out of the question. In the past 15 years our best agricultural land has been reduced by 3 percent through diversion to other uses—roads, industrial developments, housing projects, airports, and so on. Population is increasing at an explosive rate. This means fewer acres available per person.

We are living in a fast-moving world. We could not stop progress even if we wanted to. We have the choice of keeping in step or of being forced out of the picture.

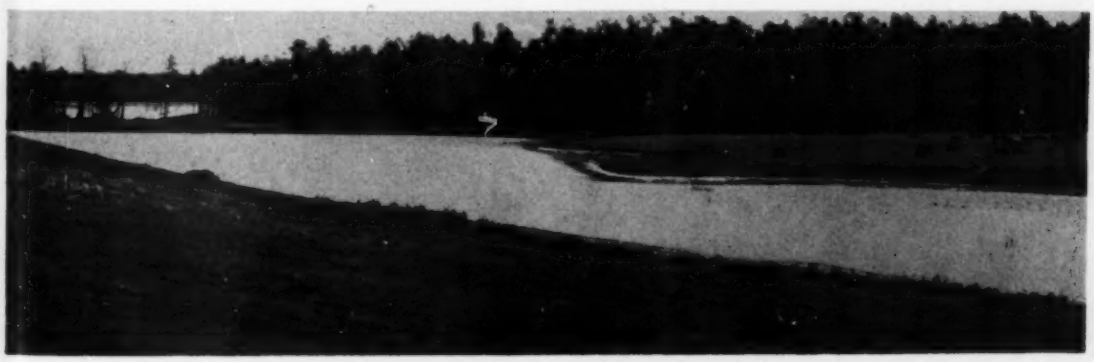
We are assembled here because of our favorable convictions for the soil- and water-conservation program.

I would like to amend my assigned subject of "What A Soil and Water Conservation Program Means To A Dairy Farmer," by adding two words, "Any Farmer."

The program, when deliberately worked out by the farmer and the Soil Conservation Service technician, is a blueprint of the foundation and of the frame work for farming. The rest of the structure may be varied by prevailing conditions and circumstances. The foundation and framework must be sound and durable.

The dairy farmer has tried practically every recommendation offered in his efforts to obtain ample feeds economically. He has found the answer in the soil- and water-conservation program. We are enjoying the fruits of technical information reduced to practical application. It means much to us to know the ability, or capability, of the soils of our farms. This one thing alone saves much time and expense. For example: It may take years to find out by the trial and error method why seeding deep-

Note:—The author is a supervisor of the Newberry Soil Conservation District, S. C. This article is a digest of a talk given at a recent meeting of the South Carolina Association of Soil Conservation District Supervisors.



Pasture, pines, and a farm pond on the C. T. Smith farm.

rooted crops on land with plastic subsoil is doomed to fail. One might try repeatedly and not understand the cause of failure, especially since one's neighbor is growing the same crop with success on land that looks similar but has a different soil type.

In our series of dry years, the program has brought out our dependence on water. Irrigation helps—it pays. But ample moisture without the need for irrigation would mean more profit. Conservation workers are struggling hard to convince farmers that rainwater must be kept on the field. Our soil is our greatest water reservoir, but hard-baked dirt does not absorb much water.

A soil- and water-conservation program means more grass for feed, more grass to hold soil in place, and more grass to turn back into the soil. Until we get enough organic matter turned into the soil, we may expect to suffer from droughts and to continue to depend on irrigation.

We cannot hope to have the required rainfall every 5 to 7 days throughout the growing seasons. Our total rainfall is more than sufficient to grow our crops. The distribution and the inability of our organically starved soil to retain water is our problem. The sooner we get around to practicing grass-based rotations, the more effective our rainfall is going to be.

Someone has said: "It's not the water we use but the water we lose—it's the rain we save that counts."

Your SCS technicians know the meaning and value of a grass-based rotation. Perhaps most of you soil conservation district supervisors do too. All of us have the job of letting farmers know that fibrous roots improve soil structure, increase the moisture-holding capacity and productivity, and regulate soil temperature.

What Does The Soil And Water Conservation Program Mean To A Dairyman? It means, among other things, GRASS. Grass for grazing, for the silo, for the barn loft, and grass for the soil for its improvement and water-holding capacity. It is a slow process, but it will give us a foundation and framework for farming.

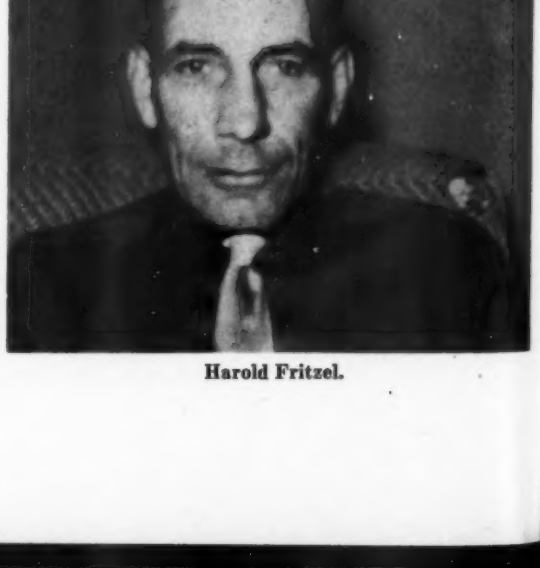
DISTRICT PROFILE

HAROLD FRITZEL of SOUTH DAKOTA

THE Kingsbury County Soil Conservation District of South Dakota has adopted as its motto: "As the soil is conserved, so prospers the land." A chief proponent of the motto is Harold Fritzel, chairman of the board of supervisors.

Instrumental in helping organize the Kingsbury district in 1947, Fritzel has served on the governing board since that time. He has the distinction of being the first cooperator and board chairman of the district. Probably of greater importance is his application of the 15 soil conservation practices included in the conservation plan developed for his 418-acre farm to demonstrate that he believes in practicing what he preaches.

Fritzel, 51, is a 1931 graduate of Iowa State College with a B.S. degree in agricultural economics. Following graduation, he was associated with various farming enterprises. He devoted 11 years to managing farms and State institutional land in Iowa. It was during this period that he became interested in soil conservation, in working with soil conservation groups, and in serving as delegate to several conservation tours and gatherings.



Harold Fritzel.

Returning to South Dakota to farm, in 1945, he embarked on his present diversified farming program of corn, brome-alfalfa, and small grain, while also maintaining a herd of registered Angus cattle. He became the first farmer in the county to establish terraces and to install sprinkler and flood irrigation along with some land leveling.

Fritzel's activities are many and varied. He has been a 4-H club leader for 12 years. He is on the board of directors and serves as treasurer for the County Crop and Livestock Improvement Association and was instrumental in establishing a 10-acre demonstration plot for testing seed stock. As a member of the South Dakota Reclamation Association he has been on their programs a number of times. He helped organize the Kingsbury County Fair board and serves as treasurer. In addition to serving as chairman of the Kingsbury County Soil Conservation District board of supervisors, he is State area vice president.

He has been the recipient of two gold medals from the Greater South Dakota Association for outstanding work in soil- and moisture-conservation and has been appropriately recognized as a tree farmer under the South Dakota Tree Farm System.

Under Fritzel's and the other supervisors' leadership, the Kingsbury district, 10 years ago, initiated an educational program that includes yearly: issuing special soil conservation editions of local papers, awarding 1-year subscriptions of SOIL CONSERVATION Magazine to all new cooperators, conducting annual supervisor tours, and holding annual meetings of district cooperators.

No project is too large or too small for Fritzel and the Kingsbury board. Primarily at his instigation, the De Smet (population 1,300) Chamber of Commerce extended an invitation to the State Association of Soil Conservation Districts to hold their annual convention in DeSmet in 1958. This 3-day affair had always been held in the larger cities of the State heretofore, as larger facilities were necessary for an attendance that varied from 300 to 400. With the district's county seat town awarded the convention, Fritzel was designated as general chairman by other members of the board.

It is typical of the energetic Fritzel that when one skeptic questioned the advisability of such a small district and town attempting to sponsor a convention of this magnitude that he replied "We'll give them a convention they'll never forget."

—KARL F. ZIEGLER

Convenient Fishing

Fayette County, Georgia, Prints Map Showing the Location of Farm Fishponds Open to the Public.

By ROY A. GRIZZELL, JR.

FISHING in farm ponds has become a great sport in Fayette County, Ga. And it has created a profitable business for many of the farmers on whose land the ponds are located. Altogether, the "take" in fishing fees by pond owners of the county was around $60,000 last year, and the fishing business is still growing.

Less than 15 years ago the only fishing in the county was from four old mill ponds, and the

Note:—The author is field biologist, Soil Conservation Service, Decatur, Ga.

Pond fishing promotes the fish bait business in Fayette County, Ga.

fishing was not very good in these. Today, there are 309 properly constructed farm ponds, and nearly all are stocked with fish. The pond-construction program is largely a result of the soil- and water-conservation program of the Fayette County unit of the Towaliga Soil Conservation District.

F. M. Satterfield, SCS work unit conservationist, has worked long and patiently, and often on his own time, to promote this pond fishing program. He helped design most of the ponds and gave technical advice on how to stock, fertilize, and manage the ponds for good fishing. The results have been gratifying, not only to Satterfield and the soil conservation district supervisors, but also to the pond owners and the sportsmen of the county who like to fish.

Most of the ponds were originally intended for watering livestock. But almost without exception the pond owners also wanted fish. The U. S. Fish and Wildlife Service furnished most of the fish for stocking the ponds.

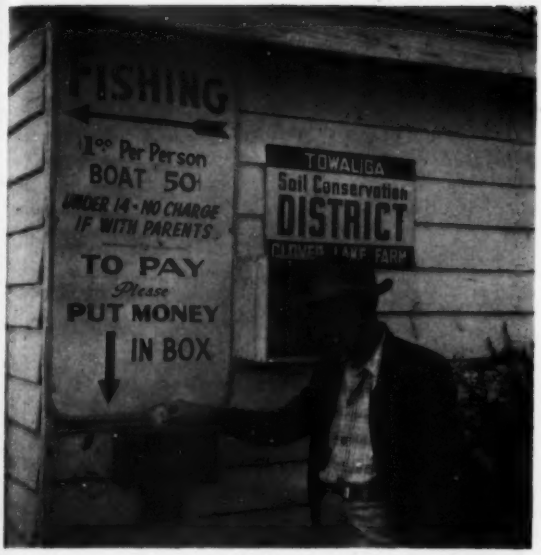
As the fish became numerous and larger a few owners started charging for the privilege of fishing in their ponds. This custom spread until many of the ponds became public fishing grounds.

Three methods of charging for fishing privilges evolved. Some farmers charged a fee of $1 or $1.50 per day, with the fisherman stopping by the owner's house to pay the fee. But there were disadvantages to this, because it often meant that the owner was roused before daylight by some ardent fishermen. The club fishing plan was adopted by some pond owners, whereby a fisherman would pay a flat fee for a permit to fish during a given period—usually a year. The fee most often asked for a year's fishing rights was $30.

In recent years the "honor system" has been adopted by most pond owners. Under this system the owner puts up a locked box with a slit in the top near the pond. Any fisherman may deposit the required fee in this box and proceed with his fishing without further bother to himself or the pond owner. Some pond owners have a supply of small envelopes at the box, on which the fisherman writes his name as he deposits the fee. This enables the pond owner to determine who his customers are.

As the pond fishing fever grew in Fayette County, Mrs. Frances Reeves decided that both farmers and sportsmen might appreciate further promotion of the program. She approached

A local merchant points out a good fishing pond to a customer in Fayette County, Ga.



The honor system of collecting for fishing privileges is used by most fish-pond owners in Fayette County, Ga.

Satterfield with the idea of getting up a county map showing the location of farm ponds open to public fishing. The idea caught on. A meeting was called of interested pond owners and the map developed. The printing of the map was financed by small block advertisements on the lower part of the sheet. In addition to showing the location of fishing ponds, a short description of each pond is printed in a box around the edges of the map. These maps are distributed and displayed widely, especially in sporting goods stores and public places where fishermen are likely to congregate.

The preparation of this fishing map has now become an annual affair. More and more pond owners are participating in the program. A special meeting is held each year for all pond owners who wish to have their ponds placed on the map. The featured speaker at such meetings usually is a biologist who discusses fish-pond management, including fertilization and weed control.

When the map publication was first started, some pond owners were afraid the competition from increased publicity would hurt their business. Actually it has worked out the other way. Each year sees more ponds added to the program, but the fishermen continue to come in increasing numbers.

Many farm pond owners are making more money from their pond acreage than any similar area on their farms. In addition to the $60,000 contributed by fishermen directly to the pond owners each year, bait dealers, sporting goods dealers, gas stations, stores, and icehouses have all benefited. Everybody seems happy about the widespread pond-fishing business in Fayette County, especially the fishermen who can now find some of the best fishing in the State within a few minutes drive from their homes.

Chicago Scouts Plant Trees In Tennessee

By ALFRED D. SMITH

ERNEST S. HYMAN, scoutmaster of troop 968 of Chicago, Ill., takes his Boy Scouts to a different section of the country each year to study and practice soil conservation.

This year, he chose Celina, Tenn., one of the older communities on the Cumberland River.

This community is well-known for its early industry of logging and rafting down the Cumberland. Cordell Hull has related great memoirs about the vastness of this early industry.

Note:—The author is work unit conservationist, Soil Conservation Service, Celina, Tenn.

Boy Scouts of troop 968, Chicago, planting trees on the H. T. Dodson farm, near Celina, Tenn.

Celina, known as the home of Dale Hollow Reservoir and the holder of a record on trout fishing, was a natural selection for conservation study—to say nothing of the natural beauty of the surrounding area.

Upon Scoutmaster Hyman's arrival, his first comment was "Eureka!" So, he and the scouts contacted district cooperator H. T. Dodson in regard to their planting trees on his farm. Dodson immediately agreed to this. He had previously planned to plant the entire farm to trees.

He contacted the soil conservation district office for additional trees and planting bars, along with technical assistance.

Dodson expressed his thanks and appreciation to the Illinois Boy Scouts for planting his trees.

Tall Wheatgrass For Alkali Spots

By ROBERT G. CAMERON

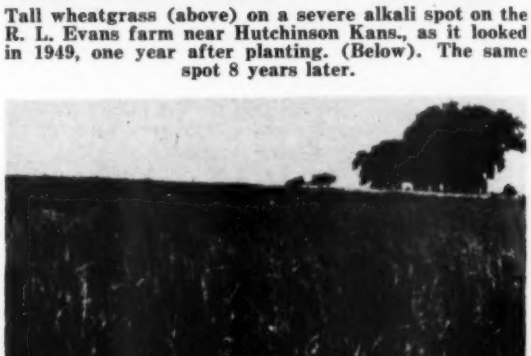
TALL wheatgrass has been a boon to farmers in parts of western Kansas where alkali spots are common. This grass will thrive in alkaline soils. It is adapted to wet soils as well as to semiarid conditions, and it produces high yields of hay and makes a tolerable pasture, even on highly alkaline soils.

The first planting in Reno County, Kans. was on the R. L. Evans & Son farm in 1948. Mr. Evans and his son are cooperating with the Reno County Soil Conservation District and live southwest of Hutchison. The area planted was too wet to farm during wet years and too alkaline and badly crusted during dry years. The field was so alkaline that winter wheat would sprout, grow to 3 or 4 inches in height and then die. Some wheat plants might even head out but would not fill. Occasionally, milo maize would yield 5 to 10 bushels if the season was ideal. Weeds even found it difficult to grow. Prairie saltgrass was the only natural vegetation that could survive on these soils.

Tall wheatgrass was planted as a trial on 5 acres in September of 1948. The field was crusted enough to drive across with a small tractor and drill. Soon after planting, the soil was packed by a heavy rain and then began blowing. As soon as possible, the area was disked. All hope of a stand was abandoned. However, early spring brought excellent growing conditions, and the grass seedlings began springing up. By the next fall, a good stand was on most of the field. The few blank areas were redrilled.

The stand was considered a success by the end of the second year. Seed was harvested during the third season. The seed crop returned $200 per acre. Mr. Evans, Sr. said, "That's more than the 5 acres made in the last 10 years." He

Tall wheatgrass (above) on a severe alkali spot on the R. L. Evans farm near Hutchinson Kans., as it looked in 1949, one year after planting. (Below). The same spot 8 years later.



Note:—The author is work unit conservationist, Soil Conservation Service, Hutchison, Kans.

continues to use this field mainly for seed production.

The planting on the Evans' farm influenced some of his neighbors and other district cooperators to try tall wheatgrass on their farms.

Walter Peirce, Evans' neighbor, planted an alkaline area. His beef cattle used the grass on a rotation basis with bromegrass and saltgrass pastures. Peirce has found that during normal rainfall, tall wheatgrass has a fairly fast recovery and works out well in a rotation program. Also, he has pastured the Evans' area to utilize the grass and hay after a seed harvest.

"Tall wheatgrass makes as good or maybe a little better hay than native grass," says H. L. Brownlee, Sylvia, Kans., another cooperator of the Reno district. "My cows will eat the hay even if it is old and stiff. It's pretty good pasture, especially in spring and fall, but not too good when making seed. If you have alkali ground, you need tall wheatgrass." Brownlee harvested about 200 bales of hay from a 7-acre field of tall wheatgrass.

Earl Thompson of Sylvia, when asked about his grass, said: "Well, I have 25 acres and have had 25 head of cattle on it and cut a hay crop. I have 13 acres of saltgrass that the cattle run on along with the tall wheatgrass. It's the best pasture I ever had, even though I have a Ninnescah river bottom pasture." Thompson estimates he harvested 340 bales that weighed between 75 and 80 pounds from his field after he had pastured it.

Thompson added, "I couldn't raise wheat, alfalfa, or sorghums on that field, so when the Soil Conservation Service technician suggested that I try tall wheatgrass, I figured, what could I lose? I'd seen the Evans' field and mine wasn't as bad as his."

THE SOIL AND WATER CONSERVATION JOB, to be fully successful, needs several other ingredients in addition to *technical assistance.* It requires *research,* to provide a sound scientific base for practices. It requires *education,* to communicate knowledge of new methods as rapidly as possible. And it often requires *credit or cost-sharing* help, to enable farmers and ranchers install needed conservation measures without delay.

D. A. WILLIAMS, *Administrator*
Soil Conservation Service

AMERICAN AGRICULTURE: Geography, Resources, Conservation. By Edward Higbee. 399 pp. Illustrated. 1958. New York: John Wiley & Sons, Inc. $7.95.

A geographer's description of the agriculture of the United States might be expected to treat the subject with broad strokes. This one does just that, but with several unique angles.

Through the entire account runs a consciousness of the soil- and water-conservation problems of each area, and of the measures being taken to meet them. This is encouraging evidence that conservation is becoming accepted as a normal part of the agricultural scene, and not something special superimposed upon an occasional farm or ranch.

A part of the description of each agricultural region is an example of an actual farm representative of the prevailing type of farming. In each case, the author has selected a farm that is following a basic conservation plan. The land-use map illustrates the adaptation of the farming system to the land capability pattern of the area.

The introductory section of the book discusses land resources and their use, climate and agriculture, and soils and land capability.

The agricultural regions are discussed in two groups: the dry west and the humid east. In reversing the usual order of discussion, the author breaks with the traditional approach of following the course of land settlement from the Atlantic to the Pacific.

The text is clearly written and many charts and maps give a fresh view of the statistics.

The author is professor of geography and agricultural economics at the University of Delaware. Previous experience as a soil conservationist and agronomist in the United States and foreign countries equips him to write of the agricultural scene from first-hand knowledge. He has visited every one of the individual farms used to illustrate the regional descriptions.

—BEN OSBORN

A Tree Grows In Minnesota

AT the meeting of the National Association of Soil Conservation Districts at Minneapolis in 1958, samples of soil from each of the Nation's 2,750 soil conservation districts were assembled. These samples were presented to the State of Minnesota.

On Arbor Day, May 2, 1958, a Norway (red) pine was planted on the State Capitol Grounds during an elaborate ceremony, with many prominent speakers. The soil samples from the soil conservation districts were used as the main filler around the roots of the pine tree.

Officers of the State Association of Soil Conservation Districts place soil from 2,750 districts around the Norway pine tree planted on the State Capital Grounds of Minnesota.